

## Remarks

### I. Status of claims

Claims 1-5, 7-10, and 12-26 are pending.

Claims 12-14 have been allowed.

### II. Examiner's request for information

In part 2 of the Office action dated May 9, 2005, the Examiner has stated what information he believes he needs from Applicant in order to be able to properly examine the Application. Each of the Examiner's statements is addressed in a respective one of the following sections, where the page and line numbers in the section headings refer to the locations of the Examiner's statements in the Office action dated May 9, 2005.

#### A. Examiner's statement on page 4, lines 2-19

The Examiner has stated that:

Applicant responds to the Examiner's prior Requests for Information and states the following (see Response to Advisory Action; pp. 2-3):

It is unclear why the Examiner has excluded U.S. Patent No. 6,157,955 from consideration as an example of a prior art reference on which the bulleted statements are based, especially since this patent teaches the information contained in each of these statements:

The Examiner did not include the U.S. patent when considering the background art because it was not at all clear that the U.S. patent embodied all of the background prior art. The Application simply states:

To address some of these issues, U.S. Patent No. 6,157,955 has proposed a general-purpose programmable packet-processing platform for accelerating network infrastructure applications that have been structured to separate the stages of classification and action. . .modules.

The language "[T]o address some of these issues" does not clearly indicate what prior art the patent discusses and where support is located. The U.S. patent document is some 128 columns long making it difficult to locate such support. Perhaps specific portions of the U.S. patent should be discussed in tandem with the background art discussion (as done in the Response to the Advisory Action).

It is noted that the paragraph on page 2, lines 23-31 of the Background section of the application merely provides a brief summary of the disclosure of U.S. 6,157,955 ("the '955 patent"), not an exhaustive recitation of the teachings of the '955 patent. Indeed, this paragraph is largely quoted from the Abstract of the '955 patent, as clarified by the Amendments to the specification presented above.

It appears that the Examiner's suggestion to discuss specific portions of the '955 patent in tandem with the background art discussion relates to the Examiner's statements quoted in sections II.B through II.C below. If the Examiner is requesting information beyond what is covered below in sections II.B and II.C, Applicant asks the Examiner to indicate what additional specific items of information he would like Applicant to provide that would aid in his examination of the application.

B. Examiner's statement on page 4, line 20, through page 5, line 10

The Examiner has stated that:

The Examiner will now attempt to analyze Applicant's support for requested background art. In response to the Examiner's request for information related to the following background art:

Network infrastructure services conventionally are implemented as one or more software modules executing on general-purpose computers.

Applicant states the following:

US patent No. 6,157,955 discloses that:  
"General Purpose computers, such as PCs running NT/Windows or workstations running Solaris/HP-UX, etc. are a common method for deploying network infrastructure applications."  
(Col. 1, lines 52-55)

In response, the above text does not mention the "software modules" or "infrastructure services." It appears the "infrastructure services" could correspond to the "infrastructure applications", however, the infrastructure services may also include OS type services including IPC, file system, memory management, threads, I/O etc.. that are not part of the applications. Are the "services" the same as the "applications?"

In some instances, the '955 patent uses the term "applications" to refer to software applications. For example, the Background section of the '955 patent recites that (col. 1, lines 26-28):

Network infrastructure applications monitor, manage and manipulate network traffic in the fabric of computer networks.

That is, this statement in the '955 patent teaches that network infrastructure applications provide network infrastructure services (i.e., the services of monitoring, managing, and manipulating network traffic). In other instances, the '955 patent appears to use the term "applications" to refer to the network infrastructure services that are provided by software applications. For example, the Background section of the '955 patent recites that (col. 1, lines 26-28):

These operating systems are generally not known for having quick reboots on power-cycle or other wiring-closet appliance oriented characteristics important for network infrastructure applications.

In the section of the '955 patent quoted above (col. 1, lines 52-55), it appears that the term "applications" refers to services that are implemented by software applications.

It is believed to be common knowledge that a computer application may be implemented by one or more software modules.

C. Examiner's statement on page 5, line 11, through page 6, line 3

The Examiner has stated that (emphasis added):

In response to the Examiner's request for information related to the following background art:

New network infrastructure applications may be loaded and, generally, existing network infrastructure applications may be updated on a

general-purpose computer simply by loading the new application or application update.

Applicant states the following:

U.S. Patent No. 6,157,955 discloses that "There are, however, a couple of key issues with special function appliances. For example, they are not expanded by their very nature. If the network manager needs a new application, he/she will need to procure a new appliance. Contrast this with loading a new application on a desktop PC. In the case of the PC, a new appliance is not needed with every new application." (Col. 2, lines 61-67; emphasis added)

In response, the above text does not mention "network infrastructure applications ... loaded ... or updated." The above text mentions a network manager needing a new appliance and loading a new application on a PC.

The Examiner, however, has misconstrued the quoted section of the '955 patent. In particular, this section of the '955 patent simply makes the points that the network manager will need a new appliance for a new application (i.e., service) when network services are provided by fixed-function appliances, whereas the network manager need only load a new application (i.e., software application) for the new application (i.e., service) when network services are provided by a general purpose computer. The latter of these points corresponds to the statement in the Background section of the pending application that is cited by the Examiner.

D. Examiner's statement on page 6, line 4, through page 7, line 3

The Examiner has stated that:

Applicant still has not addressed the following request present in the final Office action:

In the present disclosure, the background section identifies several prior art roundtable networks/protocols (including SNA, OSI, TCPIIP, XNS, IPX, AppleTalk, and DECnet), prior art network infrastructure services and prior patent 6,157,955. Applicant must specifically consider this prior art when

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complying with the above requests/1.105  
requirement.

The Background section of the application states that SNA, OSI, TCP/IP, XNS, IPX, AppleTalk, and DECnet are examples of network protocols (see page 1, lines 14-15). Support for this statement may be found in col. 10, lines 29-30 of U.S. Patent No. 6,006,275, which is listed on the Form PTO 1449 that is submitted with this Amendment.

The Background section states that (page 1, lines 23-28):

Network infrastructure services have been developed for monitoring, managing and manipulating traffic through a network. In general, network infrastructure services may be classified as security services (e.g., firewall, proxy and intrusion detection services), quality of service services (e.g., load balancing), or network management services (e.g., application level management and active network management services).

Support for this statement may be found in col. 1, lines 26-41 of the '955 patent.

The '955 patent (i.e., U.S. Patent No. 6,157,955) was submitted with the Information Disclosure Statement that was filed with the application and was considered by the Examiner.

Applicant believes that the Examiner's request in this regard has been fully responded to. It is unclear what other information Applicant possibly could provide to satisfy the Examiner's request for information that would aid the Examiner in his examination of the application.

E. Examiner's statement on page 7, lines 4-17

The Examiner has stated that:

The Examiner specifically requested:

[A]ny documentation known to qualify as prior art under 35 U.S.C. sections 102 or 103 with respect to the invention as defined by the independent and dependent claims.

and;

[A] discussion of relevant passages, figs. etc. with respect to the claims must be provided. The examiner is looking for specific references to 102/103 prior art that identify independent and

dependent claim limitations. Since applicant is most knowledgeable of the present invention and submitted art, his/her discussion of the reference(s) with respect to the instant claims is essential.

Applicant has presented prior art via the background discussion and/or the prior U.S. patent (6,157,955) that appears to teach loading or updating a "kernel providing basic operating services to the network device and to load the received kernel" as found in claim 1, "changing the network infrastructure function ... comprises routing ... network service application providing the network infrastructure function" as found in claim 15 and "change the network infrastructure function by routing ... network service application" as found in claim 21. Applicant must address whether the prior art reads on these new limitations.

As explained in detail below in response to the Examiner's claim rejections, Applicant believes that the prior art described in the Background section of the application and the disclosure of the '955 patent, together with the disclosure of Ramaswamy (U.S. 6,424, 621), do not provide the requisite factual basis nor establish the requisite motivation to support a reasonable conclusion that the features recited in claims 1, 15, and 21 would have been obvious under 35 U.S.C. § 103(a).

F. Examiner's statement on page 7, lines 4-17

The Examiner has stated that:

Applicant still has not responded to the following request present in the non-final and final Office actions:

The examiner also requests, in response to this Office action, a showing of support for language added to any original claims on amendment and any new claims. That is, indicate support for newly added claim language by specifically pointing to page(s) and line no(s). in the specification and/or drawing figure(s). Additionally, in the event documentation is incorporated by reference (i.e. publications or "common knowledge" (generally found in the background section but not a publication) and is relied upon for supporting claim limitations, such supporting documentation and limitations

must be identified. This will assist the examiner in prosecuting the application. Here again this request is derived from 37 C.F.R. 1.105.

Support for the newly added limitations in claims 1, 5, 12, 15 and 21 has not been shown. Applicant must provide this support in response to this Office action.

Support for the features previously added to claim 1 is provided by: the disclosure on page 4, lines 1-2; claim 6 as originally filed; and the disclosure on page 12, line 1, through page 13, line 11.

The previous amendments to claim 12 simply rewrote original claim 12 in independent form by incorporating the original features of the claims from which claim 12 depended. Thus, the support for the features previously added to claim 12 is provided by claims 1, 6, and 11, as originally filed.

Support for the features previously added to claim 15 is provided by the disclosure on page 12, line 28, through page 13, line 11.

Support for the features previously added to claim 21 is provided on by the disclosure on page 12, line 28, through page 13, line 11.

#### G. Conclusion

Applicant has satisfied each of the Examiner's requests for information and therefore the Examiner's request for information now should be withdrawn.

### III. Claim rejections

#### A. Claim rejections over Ramaswamy and "admitted prior art"

The Examiner has rejected claims 1-5, 7-10 and 15-26 under 35 U.S.C. § 103(a) over Ramaswamy (U.S. 6,424,621) in view of "admitted prior art".

#### 1. Independent claim 1

The Examiner has acknowledged that Ramaswamy fails to teach or suggest anything about the feature of independent claim 1 in which each network device is configured to

receive from a remote network node a different respective kernel providing basic operating services to the network device and to load the received kernel.

To make-up for this failure of Ramaswamy's disclosure, the Examiner has stated that:

The admitted prior art discussed in the background section of the present specification teaches replacing/updating network infrastructure functions/services/applications/modules/kernels to configure a network device in accordance with the users needs. Updating or changing existing kernels/infrastructure functions provides the greatest flexibility.

The Background section of the present application, however, merely teaches that the network infrastructure function provided by a general-purpose computer may be changed or updated by loading a new application and that the operating characteristics of a dedicated device may be changed by loading a new configuration file (page 2, lines 5-7 and 12-14):

New network infrastructure applications may be loaded and, generally, existing network infrastructure applications may be updated on a general-purpose computer simply by loading the new application or application update.

...

Although the operating characteristics of a dedicated device generally may be changed simply by loading a new configuration file into a dedicated device, the service functionality of a dedicated device typically cannot be changed.

Neither an application nor a configuration file is a kernel providing basic operating services to the network device, as recited in independent claim 1. Therefore, neither Ramaswamy nor the "admitted prior art" teaches or suggests the system of claim 1 in which in which each network device is configured to receive from a remote network node a different respective kernel providing basic operating services to the network device and to load the received kernel. For at least this reason, the Examiner's rejection of independent claim 1 over Ramaswamy in view of the "admitted prior art" should be withdrawn.

In addition, the Background section does not teach or suggest anything that would have led one of ordinary skill in the art to modify Ramaswamy's data packet switching and load balancing system such that each of the control processor 42 and the switching processors 44 is configured to receive from a remote network node a different respective kernel providing basic operating services to the network device and to load the received kernel.



Ramaswamy teaches that in his general-purpose multiprocessor computer system all of the processors share the same kernel, which corresponds to the operating system for the entire multiprocessor computing system. For example, Ramaswamy explains that (col. 11, lines 24-28):

The operating system level, also known as the kernel, provides the basic services for the control processor 42 as well as the switching processor 44, such as activating the hardware directly or interfacing to another software layer that drives the hardware.

Ramaswamy does not even hint that each of the control processor 42 and the switching processors 44 is configured to receive from a remote network node a different respective kernel providing basic operating services to the network device and to load the received kernel. Indeed, since each of the control processor 42 and the switching processors 44 already share the same kernel of the multiprocessor computer system, there is no need for each of these processors to be configured to receive from a remote network node a different respective kernel providing basic operating services to the network device and to load the received kernel.

For at least this additional reason, the Examiner's rejection of independent claim 1 under 35 U.S.C. § 103(a) over Ramaswamy and the "admitted prior art" should be withdrawn.

2. Claims 2-5 and 7-10

Each of claims 2-5 and 7-10 incorporates the features of independent claim 1 and therefore is patentable over Ramaswamy and the "admitted prior art" for at least the same reasons explained above.

3. Independent claim 15

Independent claim 15 recites "changing the network infrastructure function performed by at least one of the network devices, wherein the changing of the network infrastructure function comprises routing from a remote network node to each of the at least one network

device a respective network service application providing the network infrastructure function performed by the network device.”

The Examiner has acknowledged that Ramaswamy fails to teach or suggest anything about “routing from a remote network node to each of the at least one network device a respective network service application providing the network infrastructure function performed by the network device.”

To make-up for this failure of Ramaswamy's disclosure, the Examiner has stated that:

The admitted prior art discussed in the background section of the present specification teaches replacing/updating network infrastructure functions/services/applications/modules/kernels to configure a network device in accordance with the users needs. Updating or changing existing kernels/infrastructure functions provides the greatest flexibility.

As explained above, the Background section of the present application merely teaches that the network infrastructure function provided by a general-purpose computer may be changed or updated by loading a new application and that the operating characteristics of a dedicated device may be changed by loading a new configuration file (see page 2, lines 5-7 and 12-14). The Background section of the present application does not teach or suggest anything about “routing from a remote network node to each of the at least one network device a respective network service application providing the network infrastructure function performed by the network device,” as recited in claim 15. Since neither Ramaswamy nor the “admitted prior art” teaches or suggests this feature of claim 15, the Examiner's rejection of independent claim 15 over Ramaswamy in view of the “admitted prior art” should be withdrawn.

In addition, neither Ramaswamy nor the “admitted prior art” teaches or suggests anything that would have led one of ordinary skill in the art at the time the invention was made to change the network functions that are performed by the control processor 42 and the switching processors 44 (i.e., load balancing and switching), much less anything that would have led such a person to change these network functions by routing a network service application from a remote network node to each of the control processor 42 and the switching processors 44. Indeed, changing the network functions that are performed by the control processor 42 and the switching processors 44 would defeat Ramaswamy's stated objective to provide “a data packet switching and server load balancing device” (col. 2, line 65).

For the reasons explained above, the Examiner's rejection of independent claim 15 under 35 U.S.C. § 103(a) over Ramaswamy in view of the "admitted prior art" should be withdrawn.

4. Claims 16-20

Each of claims 16-20 incorporates the features of independent claim 15 and therefore is patentable over Ramaswamy and the "admitted prior art" for at least the same reasons explained above.

5. Independent claim 21

Independent claim 21 recites that the computer-readable instructions cause the computer system to change the network infrastructure function by routing from a remote network node to each of the at least one network device a respective network service application providing the network infrastructure function performed by the network device.

Claim 21 is patentable over Ramaswamy and the "admitted prior art" for the same reasons explained above in connection with claim 15.

B. Claim rejections over Morioka and admitted prior art



The Examiner has rejected claims 1-5, 7-10, and 15-26 under 1-24 under 35 U.S.C. § 103(a) over Morioka (U.S. 6,631,447) in view of "admitted prior art".

The Examiner's rejection of claims 1-5, 7-10, and 15-26 under 35 U.S.C. § 103(a) over Morioka in view of the "admitted prior art" should be withdrawn for the following reasons.

1. Independent claim 1

The Examiner has acknowledged that Morioka fails to teach or suggest anything about the feature of independent claim 1 in which each network device is configured to

receive from a remote network node a different respective kernel providing basic operating services to the network device and to load the received kernel.

To make-up for this failure of Morioka's disclosure, the Examiner has stated that:

The admitted prior art discussed in the background section of the present specification teaches replacing/updating network infrastructure functions/services/applications/modules/kernels to configure a network device in accordance with the users needs. Updating or changing existing kernels/infrastructure functions provides the greatest flexibility.

The Background section of the present application, however, merely teaches that the network infrastructure function provided by a general-purpose computer may be changed or updated by loading a new application and that the operating characteristics of a dedicated device may be changed by loading a new configuration file (see page 2, lines 5-7 and 12-14)

Neither an application nor a configuration file is a kernel providing basic operating services to the network device, as recited in independent claim 1. Therefore, neither Morioka nor the "admitted prior art" teaches or suggests the system of claim 1 in which in which each network device is configured to receive from a remote network node a different respective kernel providing basic operating services to the network device and to load the received kernel. For at least this reason, the Examiner's rejection of independent claim 1 over Morioka in view of the "admitted prior art" should be withdrawn.

In addition, independent claim 1 recites that the *shared memory facility provides a physical transport medium for routing packets between the network devices*. Morioka does not teach or suggest anything that would have led one of ordinary skill in the art at the time the invention was made to route data packets between network devices through or over a shared memory facility.

With respect to the second embodiment, which is cited by the Examiner, each multi-processor cluster 100 includes a respective cluster communication unit 500 that "controls inter-cluster communications between respective clusters 100" (col. 22, lines 8-9). Morioka explains that (col. 20, line 66, through col. 21, line 3; emphasis added):

... if the access from the processor 200 is to a local memory 400 in a remote cluster, the cluster communication control unit 500 identifies this, and then transfers the access request via the inter-cluster bus 2200 to a cluster communication unit 500 in the remote cluster.

That is, the access requests between clusters are routed between the cluster communication units 500 over the inter-cluster bus 2200, not over a shared memory that interconnects the clusters. *Indeed, in the second embodiment shown in FIG. 15, the clusters 100 are not interconnected by a shared memory.*

With respect to the first embodiment of FIG. 1, each multi-processor cluster 10 includes a respective processor memory interface unit (PMU) 300 that controls processor accesses to local shared memory. Morioka explains that (col. 9, lines 15-19; emphasis added):

When the access request from the processor 200 is to a local shared memory 400 in another cluster remote from therefrom, the access request is transferred to the associated processor memory interface 300 in the remote cluster via the processor global bus 1800.

That is, in the first embodiment, the access requests between the clusters 100 are routed between processor memory interface units 300 over the processor global bus 1800, not the global shared memory 600. *Consequently, in the first embodiment, packets from the local communications protocol stacks are not captured and routed over a shared memory that interconnects the clusters 100.*

Thus, Morioka does not teach or suggest anything about routing packets between network devices over a shared memory. For at least this additional reason, the Examiner's rejection of independent claim 1 under 35 U.S.C. § 103(a) over Morioka in view of the "admitted prior art" should be withdrawn.

## 2. Claims 2-5 and 7-10

Each of claims 2-5 and 7-10 incorporates the features of independent claim 1 and therefore is patentable over Morioka and the "admitted prior art" for at least the same reasons explained above.

## 3. Independent claim 15

Independent claim 15 recites "changing the network infrastructure function performed by at least one of the network devices, wherein the changing of the network infrastructure

function comprises routing from a remote network node to each of the at least one network device a respective network service application providing the network infrastructure function performed by the network device.”

The Examiner has acknowledged that Morioka fails to teach or suggest anything about “routing from a remote network node to each of the at least one network device a respective network service application providing the network infrastructure function performed by the network device.”

To make-up for this failure of Morioka’s disclosure, the Examiner has stated that:

The admitted prior art discussed in the background section of the present specification teaches replacing/updating network infrastructure functions/services/applications/modules/kernels to configure a network device in accordance with the users needs. Updating or changing existing kernels/infrastructure functions provides the greatest flexibility.

As explained above, the Background section of the present application merely teaches that the network infrastructure function provided by a general-purpose computer may be changed or updated by loading a new application and that the operating characteristics of a dedicated device may be changed by loading a new configuration file (see page 2, lines 5-7 and 12-14). The Background section of the present application does not teach or suggest anything about “routing from a remote network node to each of the at least one network device a respective network service application providing the network infrastructure function performed by the network device,” as recited in claim 15. Since neither Morioka nor the “admitted prior art” teaches or suggests this feature of claim 15, the Examiner’s rejection of independent claim 15 over Morioka in view of the “admitted prior art” should be withdrawn.

In addition, independent claim 15 recites the step of *routing data packets between the network devices through the shared memory facility*. As explained above in connection with independent claim 1, neither Morioka nor the “admitted prior art” teaches or suggests anything that would have led one of ordinary skill in the art at the time the invention was made to route data packets between network devices through or over a shared memory facility. Thus, for this additional reason, the Examiner’s rejection of independent claim 15 under 35 U.S.C. § 103(a) over Morioka in view of the “admitted prior art” should be withdrawn.

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4. Claims 16-20

Each of claims 16-20 incorporates the features of independent claim 15 and therefore is patentable over Morioka for at least the same reasons explained above.

5. Independent claim 21

Independent claim 21 recites that the computer-readable instructions cause the computer system to change the network infrastructure function by routing from a remote network node to each of the at least one network device a respective network service application providing the network infrastructure function performed by the network device.

Claim 21 is patentable over Morioka and the "admitted prior art" for the same reasons explained above in connection with claim 15.

V. Conclusion

For the reasons explained above, all of the pending claims are now in condition for allowance and should be allowed.

Charge any excess fees or apply any credits to Deposit Account No. 08-2025.

Respectfully submitted,

Date: August 9, 2005



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